

R E M A R K S

Claims 2 to 7 and 10 have been amended to improve their form and better define the invention.

Reconsideration of the rejection of all of the claims is respectfully requested for a number of reasons including the facts that the instant claimed invention is found in applicant's parent application serial no. 012,082 filed February 17, 1970 , over five years prior to the filing of Rich et al, filed July 28, 1975, the sole reference applied in the rejection of claims 1-20 and furthermore, in view of the fact that the instant claimed invention is broadly disclosed in applicant's parent application to serial no. 012,082 and the instant application, serial no. 501,395 now U.S. Patent 3,371,404. It is noted that applicant has an unbroken chain of applications extending from said ser.no. 501,395 to the instant application as set forth under CROSS REFERENCE TO RELATED APPLICATIONS, and that such unbroken chain includes said applications serial numbers 012,082 and 501,395.

Commenting on the Examiner's arguments, it is submitted that the Examiner is supporting his continued rejection on the basis of his limited interpretation of what is disclosed in the specification of U.S. Patent 3,371,404, it being noted that no consideration has been given by the Examiner to application ser. no.012,082 the specification and drawings of which are in the instant application. However, such description ( which appears in the second paragraph of page 2 of Paper # 6) is much too limited as to what is actually disclosed in the specification and drawings of said '404 patent and what is actually taught therein to the man skilled in the art who reads and studies such disclosure in its entirety. In effect, the Examiner has limited his interpretation of the disclosures found in the '404 patent to but part of what is actually disclosed therein, in order to sustain his continued rejection of claim 1-20.

U.S. Patent 3,371,404 is based on disclosures found in its parent application serial no. 668,561 ,filed 6/27/57, which

provides numerous apparatus and methods for effecting chemical reactions. While it is true that the main thrust of the invention present in the '404 patent relates to cladding and deforming materials as the Examiner points out in his arguments, the entire disclosure is not limited to such cladding and deforming process, only the claims thereof are so limited. Chemical reactions in the reaction chamber 12, which is part of a completely disclosed reaction system, are mentioned and suggested at half a dozen locations of the specification and the apparatus for effecting such chemical reactions is completely disclosed in the specification of the '404 patent.

While it is true that the '404 patent first discloses the use of a "chemical ...means" for generating explosions in the reaction chamber (col. 3 ,lines 4 and 5) , the use of chemicals and chemical reactions generated in reaction chamber 12 is disclosed at least six times thereafter in the specification (i.e. three times in column 3 at lines 8-11, <sup>Next: Presence of substance, not absorption of laser light</sup> lines 18-20 and line 35; and three times in column 6 at lines 42, lines 43-44 and line 49 wherein the term "rapidly burned" refers to chemical combustion which is definitely a chemical reaction taking place in such reaction chamber 12). The person reading the specification and studying the drawings is thus taught to employ the reaction apparatus disclosed and illustrated in FIG. 1 for the purpose of effecting a chemical reaction with respect to a chemical or chemicals admitted to the reaction chamber by the means disclosed, and such reaction may be effected by the chemical or chemicals (col.6 lines 44 and 45) ....by an intense laser or electron beam (col.6 line 50). While the chemical reactions, as described in the last paragraph of the specification of the '404 patent, generate pressure waves, nevertheless chemical reactions are effected by the means (laser or electron beams) disclosed and it cannot be denied that the man skilled in the art is taught to generate a chemical reaction in a reaction chamber using a laser or electron beam to effect such reaction by directing such a beam into the reaction

chamber.

Thus it is seen that the Examiner's interpretation and description ( in the second paragraph of page 2 of Paper #6) of the disclosures found in the '404 patent, are both limited and incomplete. As such, such limited and partial interpretation and disclosure cannot properly sustain the rejection of the claims.

In further support of applicant's contention that the disclosures found in applicant's '404 patent support the broad instant claimed invention, applicant presents the following application of independent claim 1 of the instant application to the disclosure of the '404 patent:

Claim 1 of the instant application

Disclosure of the '404 Pat.

Chemical reaction apparatus comprising in combination:

Introduction applies- see col.3, lines 11.. "to effect one or more..chemical reactions.." and line 20..."other chemical reactions which occur with...."

(a) first means for forming a first stream of first matter and flowing said first matter in a direction along a predetermined path,

"..pump 26 to admit fluid to chamber 12V (col.5 line 22). See also col.6 lines 42 ff..."Chemical combustion.. reaction means..employing a solid, gaseous or liquid combustible ..or explosive chemical(s) ..continuously ..fed into chamber...in a controlled manner..by a conveying means.

(b) second means for generating a beam of collimated coherent radiation,

See col.6 lines 34ff.."beam of radiant energy...generated by ..laser..directed into liquid or gas..." See also col.6 lines 45 ff..."Chemical combustion...reaction,, rapidly burned by...intense laser beam..." all resulting in chemical reactions.

(c) third means for directing said collimated radiation beam along a path to cause it to intersect said stream of matter and to transfer sufficient energy of said beam to a quantity of said matter so as to effect a chemical change in said matter,

See co.6 lines 34 ff..."laser beam...directed into liquid or gas defining the working fluid...through a transparent portion of the wall of the chamber...."

(d) fourth means for controlling the conveyance of said first matter after it has undergone a reaction as a result of the transfer of energy thereto from said radiation beam to carry the products of reaction to a select location.

See col. 3 line 53 and Fig. 1 of the drawings...."operation of the pump 26 for removing working fluid (thru conduit 25 (line 28))..from volume 12V..."..Such control is effected by master controller 44...see last Par. col 4 and lines 5-8 of col. 5.

Further with respect to disclosures in applicant's parent United States Patent 3,371,404 which teach an apparatus and method for effecting chemical reactions with respect to one or more chemicals continuously or intermittently fed into a reaction chamber, the Examiner's attention is particularly directed to the last paragraph of the specification, particularly in view of the entire disclosure and the apparatus defined thereby as illustrated in Fig. 1 of the drawings. It cannot be denied that the apparatus 10 is a reaction apparatus with a reaction chamber 12 (col.2 line 1, etc.) and that chemical reactions may be made to take place therein (col.2 line 6; col.3 lines 11-12, 18-19, 35, etc.) or that an intense laser beam is used to initiate or effect each chemical reaction (col.6 lines 35 and 50 and lines 42 ff. - "Chemical combustion or explosive reaction means...". The fact that the disclosure of the '404 patent also includes cladding and deforming metal, does not preclude the teachings that chemical reactions, whether explosive or otherwise, actually take place in the reaction chamber 12 as a result of flowing a liquid, gaseous or particulate chemical into the volume 12V defined by such chamber, either continuously or intermittently, and after directing an intense laser beam through a window or opening in the chamber wall at the chemical located in the chamber. Nor can it be denied that such process including the flow of the reaction chemical(s) is controlled by a master controller (44). In fact, a proper and complete study of the entire specification of the '404 patent reveals that all of the elements defined in claim 1 of the instant application are broadly disclosed to the man skilled in the art reading and studying the specification and

drawings thereof. The Examiner's interpretation of applicant's disclosure found in the '404 patent as set forth in the second paragraph of page 2 of Paper # 6 is thus incomplete and relates only to the invention defined in the claims of such patent. It is briefly noted that the entire disclosure of the '404 patent was included in the continuation-in-part application ser.no. 710,518 which became U.S. Patent 3,566,645 which issued after the more immediate parent (ser.no. 5/012,082) to the instant application was filed permitting applicant the right to rely on the pertinent portions of the disclosures found in the '404 patent as a constructive reduction to practice of the broad instant claimed invention.

With respect to method claim 12 , it is submitted that the steps thereof may be practiced by the apparatus disclosed in the '404 patent without the making of a new invention and without the introduction of new matter. The chamber 12 certainly contains a reaction zone and a stream of fluent material may be admitted thereto through conduit 25 to meet the first step of the claim. (See col.3 lines 28-60; col. 4 lines 47ff., col.5 lines 5-10 which disclose chemical or chemicals as working fluid, conduit for flowing same to the chamber, automatic control means for the pump 26 pumping such chemical(s), etc.). The method steps defined in the third paragraph of claim 12 may be practiced by and are disclosed in the disclosure for the operation of the apparatus of Fig. 1 , particular reference being made to the application of claim 1 to the '404 disclosure and the disclosures found in the last paragraph of col. 6 of the specification thereof. Lines 35 and 36 thereof define generating and directing laser light into the working gas or liquid which is defined immediately thereafter (lines 42 ff) as a chemical combustion or explosive reaction material (which chemically reacts upon combustion)... "in solid, particulate, gaseous or liquid (combustible or explosive chemical) form... It cannot be denied that the molecules thereof do partake in a chemical reaction after sufficient radiation is

transferred thereto from the (laser) beam as set forth in the last paragraph of column 6 of the '404 patent. This it is seen that all of the method steps found in claim 12 are preformable by means of the apparatus of the '404 patent and are broadly disclosed therein.

The method step in claim 13 of continuously flowing the reaction fluid into the reaction chamber and zone is found at line 45, col. 6 of the '404 patent.

Method claim 17 relates to a chemical reaction method in which particles of matter are flowed along a select path and a beam of collimated radiation is caused to intersect and react on said particles. Lines 42ff. col. 6 discloses chemical combustion reaction employing particulate chemicals...continuously or intermittently fed into the reaction chamber". Lines 45 ff disclose that such chemical or chemicals may be rapidly burned (caused to undergo a chemical reaction in burning). Lines 35 ff of col. 6 disclose the projection of an intense beam of a laser into the working fluid and the sudden transfer of (laser beam) heat thereto. The chemical explosive reaction changes the state of the particulate material.

In view of the arguments presented above traversing the rejection and the limited interpretation of the teachings of the parent '404 patent and further in view of the fact that the instant claimed invention was present in parent application ser. no. 021,082 filed February 17, 1970, long before the filing of Rich et al, it is submitted that all of the claims under prosecution (1-20) are allowable and their allowance is respectfully requested so that the case may be passed to issue. It is also noted that the amendments to the claims requested herein do not raise new issues of a kind which would prevent their entry for issuance or to place the claims in better condition for appeal.

If the Examiner is of the opinion that a telephone interview with help advance the prosecution of this application, applicant may generally be reached at telephone number 609-683-4444 during daytime hours, it being noted that applicant will be away from his office from August 26, 1986 to September 5, 1986.

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Respectfully submitted,

*Jerome H. Lemelson*  
Jerome H. Lemelson  
Applicant

**CERTIFICATE OF MAILING**

I hereby certify that this correspondence is being deposited with the United States Post as First Class Mail in an envelope addressed to Commissioner of Patents and Trademarks, Washington, D.C. 20231

ON August 19, 1986  
BY: Jerome H. Lemelson JEROME H. LEMELSON  
DATE: 8/19/86